# Focus on Safety

## Nebraska Department of Agriculture



Bureau of Dairies and Foods Lincoln, Nebraska (402) 471-2536 www.agr.ne.gov

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### INTRODUCTION

The food industry has changed significantly over the past few years, and with the change comes many challenges. Today's informed consumer spends more dollars dining outside the home than ever before. With this emphasis on dining out, more pressure is placed on the food service industry to cater to the public's demand for greater variety of high-quality food that has been prepared and cooked safely.

The challenge of preparing quality safe food begins with well trained and knowledgeable food service workers. This educational material is designed to help meet the challenge by focusing on those items that are critical to the safe preparation, cooking, holding, and storage of food. It clearly and concisely identifies and discusses the basics that will help prevent foodborne illnesses.

Food safety and sanitation is not a part-time job. It is the daily responsibility of those who prepare and cook the food. However, to truly meet this challenge, it is imperative that a cooperative partnership between industry and health officials be maintained with the common goal of preventing foodborne illnesses.

Together, we must continue to Focus on Food Safety!

Seminars in food safety are available.

Contact the area sanitarian to arrange a seminar.

If you have questions or require more information, please call (402) 471-2536

### Fact Sheets Available Either On-Line @ www.agr.ne.gov or on Request

1	Nebraska Food Code
2	Nebraska Pure Food Act
3	Potentially Hazardous Food Temperature Guide
4	Date Marking
5	Two-Stage Cooling
6	Requirements of Food Establishment Operations
7	Safe Food Handler Practices and Conditions
8	Temporary Food Establishment Requirements
9	Focus on Food Safety

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### I DENTIFYING COMMON FOODBORNE ILLNESSES

Causative Pathogen	Incubation Time	Length of Illness	Common Symptoms	Foods Involved/Sources	Prevention
Bacillus Cerus	1-16 hours	6-24 hours	nausea, vomiting, cramping, diarrhea	rice and rice dishes, vegetables, sauces	Cook to proper temp. Reheat quickly. Cool foods rapidly.
Campylobacter	2-5 days	1-4 days	cramping, fever, diarrhea, nausea, headache, vomiting	unpasteurized dairy, poultry and meats, infected food handler	Thoroughly cook all foods. Use only pasteurized dairy products. Proper hand washing.
Costridium perfringens	8-24 hours	24-36ours	abdominal cramping, diarrhea, nausea	meats, poultry, gravy, beans, stews, foods cooked slowly	Cook and reheat food to proper temp. Cook in small batches. Cool foods rapidly.
Shiga Toxin-Producing E. coli	12-72 hours	1-4 days	diarrhea-often bloody, severe cramping, nausea, vomiting, fever	raw and undercooked ground meats (esp. ground beef)	Thorough cook ground meats. Avoid cross-contamination.
Hepatitis A	10-50 days	1-2 weeks; severe cases may last several months	mild or no symptoms, then sudden onset of fever, general discomfort, fatigue, headache, nausea, loss of appetite, vomiting, abdominal pain, and jaundice after several days	water, ice shellfish, salads, cold cuts, sandwiches, fruits, fruit juices, milk, milk products, vegetables, any food that will not receive a further heat treatment	Obtain shellfish from approved sources. Prevent cross-contamination from hands. Ensure food handlers practice good hand washing and no bare hand contact.
Listeria Monocytogenes	1 day- 3 weeks	Indefinite, depends on treatment, severe	nausea, vomiting, fever, chills, headache, meningitis, miscarriages	unpasteurized dairy, cheese, vegetables, seafood, poultry	Use only pasteurized dairy products. Cook properly. Hold refrigerated for limited time.
Norovirus	24-48 hours virus	1-2 days	cramping, diarrhea, nausea, vomiting, headache, fever	raw fruit, raw vegetables, prepared salads, raw shellfish	Thoroughly cook foods. Wash hands. Use certified shell fish. No bare hand contact.
(Staph) Staphylococcus auereus	1-7 hours	1-2 days	onset abrupt and often severe, nausea, vomiting, cramping, sometimes diarrhea	ready-to-eat foods, i.e., sandwiches, salads, ham and other meats, potato salads, custards, warmed- over foods; often from infected food handlers- cuts, throat, nose, and acne	Practice good hand washing and hygiene. Avoid contamination. Reduce bare hand contact with foods. Exclude food handlers with cuts and lesions. Rapidly cool foods.
Salmonella	6-72 hours	1-3 days	abdominal cramping, headache, nausea, diarrhea, fever, sometimes vomiting	undercooked or raw meats, poultry and shell eggs, poultry and egg salads, egg custards and sauces, protein foods, pets and infected handlers	Avoid cross-contamination. Cool and refrigerated foods immediately. Cook meats/poultry throughly. Practice good hand washing.
Shigella	12 hours-7 days	4-7 days, depends on treatment	diarrhea-often bloody, cramping, fever, nausea, sometimes vomiting	ready-to-eat foods associated with bar hand contact (salads, sandwiches, etc.) Source: humans (feces) and flies	Practice good hand washing after using toilet. Use approved water and foods. Control flies No bare hand contact.

### FOOD SAFETY RISK FACTORS

Risk factors are those practices or procedures that pose the greatest potential for foodborne illness. The risk factors are determined by the Center for Disease Control and Prevention (CDC) and the U.S. Food and Drug Administration (FDA).

### **FOOD SOURCE:**

- Food from unapproved or uninspected source.
- Unsound condition of food, adulterated food.
- Shellfish records not maintained properly.

### INADEQUATE COOKING:

- Improper cooking temperatures.
- Improper reheating temperatures.





### IMPROPER HOLDING:

- Unsafe cooking.
- Lack of date marking.
- Improper cold/hot holding temperatures.

### **CONTAMINATION:**

- Raw meats not separated from ready-to-eat foods.
- Species not separated.
- Equipment not properly cleaned and sanitized.

### POOR PERSONAL HYGIENE:

- Lack of appropriate hand washing.
- Bare hand contact with ready-to-eat foods.
- Food workers who are ill.
- Employees eating, drinking, or using tobacco outside of designated areas.
- Inadequate hand sink.
- Lack of soap or paper towels.



### **ENVIRONMENTAL CONTAMINATION:**

- Improper storage, labeling, or usage of chemicals.
- Presence of insects or rodents.
- Lack of potable water.
- Improper sewage disposal.

# BE ON THE LOOKOUT FOR FB (FOODBORNE ILLNESS)

Is "Looking Clean" Enough to Prevent Foodborne Illness?

### FBI STATISTICS:

- 76 million cases of FBI a year in the U.S.
- 325,000 hospitalizations a year in the U.S. caused by FBI.
- 5,200 deaths a year in the U.S. caused by FBI.
- \$7.7 \$23 billion annual cost.
- \$77,000 average cost per incident

### **FBI AGENTS:**

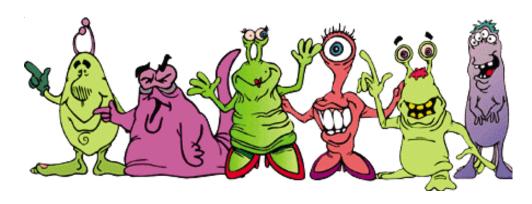
- Biological hazards: Bacteria, viruses, parasites, yeast, molds.
- Physical hazards: Glass, toothpicks, fingernails, jewelry.
- Chemical Hazards: Cleaners and sanitizers, pesticides, medications.
- Naturally occurring chemical hazards: Fish toxins, plant toxins.

### FBI SOURCE:

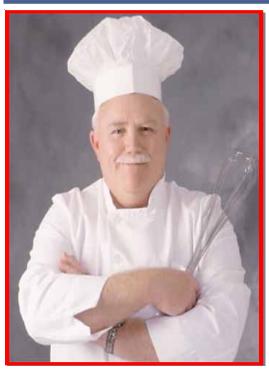
- Human/Foodworkers: Contaminated hands, illness.
- Foods: Contaminated food, time, and temperature abuse.

### FBI SYMPTOMS:

- Common Symptoms (onset 12-36 hours): Diarrhea, cramping, nausea, vomiting, low-grade fever, body aches.
- Rare Symptoms: System shutdown, coma, death.



### ILL FOODWORKERS



### RESTRICTION

### **Symptoms**

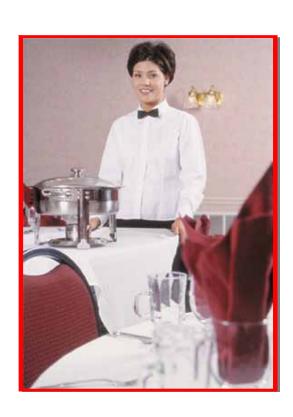
- Diarrhea.
- Vomiting.
- Fever.
- Jaundice.
- Sore throat with fever.
- Infected wound (i.e., cut, lesion, or both).

### **EXCLUSION**

### Confirmed Big 4:

- Salmonella typhi
- Shigella spp.
- E. coli 0157:H7
- Hepatitis A virus





Foodborne I liness is not a Menu I tem!

### POTENTIALLY HAZARDOUS FOODS

WHAT ARE POTENTIALLY HAZARDOUS FOODS (PHF)? PHF is any food or food ingredient (natural or synthetic) capable of supporting rapid growth of micro organisms.



### MEAT • DAIRY

Cooked or raw animal (protein) products, such as meats, poultry, dairy, milk, cheese, fish, and seafood.

### **STARCH**

Heat-treated vegetables and starches, such as cooked rice, beans, potatoes, and pasta.





### **SPROUTS • MELONS**

Tofu • Raw seed sprouts Cut Melons • Garlic in Oil • Etc.

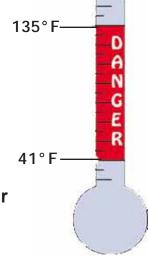
### IS THERE A MICROBE IN YOUR SOUP?

### **Necessary Conditions for Microbial Growth**



### Time and Temperature Principle:

- Holding time and temperature is critical.
- Temperature <u>DANGER ZONE</u> is from 41°F to 135°F, the range in which rapid growth occurs.
- PHF should not be exposed to danger zone for more than four hours total, including time spent in preparation, cooling, and reheating.





Micro-organisms Need Favorable Conditions to Grow!

# MONITORING POTENTIALLY HAZARDOUS FOOD TEMPERATURES

### USE AND CARE OF TEMPERATURE TAKING DEVICES

### Cleaning:

- Use a clean and sanitized thermometer.
- Single-use alcohol wipe or other approved sanitizer may be used.

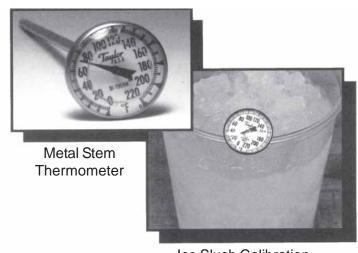


### **Taking Temperature:**

- Use a metal stem thermometer, digital thermometer, or thermocouple unit.
- Place the probe in the center or thickest part of the food, between the fold of the flexible packaged food or between packages of food; do not puncture the packaging.
- Allow time for thermometer to register and record the temperature.

### Calibrating Metal Stem Thermometers:

- Calibrate thermometers frequently.
- Insert sensing area into a cup of ice slush.
- Allow indicator to stabilize.
- Adjust calibration nut to 32°F while in ice.
- Digital thermometer and thermocouple units can be checked for accuracy using this method.



Ice Slush Calibration

### OBSERVE GOOD HYGIENIC PRACTICES



Does Mr. Yucky work in your kitchen?

- Wash hands only in the hand sink -- not in the dishwashing, food preparation, or mop sinks.
- Employees who are ill can cause foodborne illness. Enforce sick leave policy or reassign duties.
- Eat, drink, or use any form of tobacco only in designated non-food production areas.
- Do not use a common cloth towel or apron for hand wiping.

- No bare hand contact with ready-to-eat food!
- Wear nails short, clean, and unpolished.
   Restrict rings to plain bands.
- Cover open cuts and burns with finger cots, bandages, or single-use gloves.
- Follow single-use glove guidelines listed on page 9.





Good Hygienic Practices are the Responsibility of Both the Foodworker and the Management!

### FOOD SAFETY IS IN YOUR HANDS



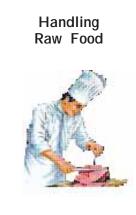
### Handwashing is Important in Preventing FBI

### Food Workers and Management

- Wash Hands FREQUENTLY and EFFECTIVELY
   20-second friction wash; adequate soap; warm water; use paper towel to dry
- Keep Hand Sinks Accessible AT ALL TIMES
- Wash Hands at APPROPRIATE TIMES

### Wash Hands After:











Improper Lack of Handwashing Causes 30% of All FBI

### NO BARE HAND CONTACT

Bare hand contact with ready-to-eat (RTE) food must be minimized. When handling RTE foods, food service workers may use utensils such as:

- Deli tissue.
- Spatulas.
- Tongs.
- Forks.
- Dispensing equipment.
- Single-use gloves.







### Single-Use Glove Guidelines



- Glove usage does not replace the need for good hand washing practices.
- Wash hands before putting on gloves.
- Put gloves on only when you are ready to handle ready-to-eat food.
- Use gloves for only one task, such as ready-to-eat foods, then discard.
- If an interruption occurs during food preparation, remove and discard gloves.
- Use clean gloves when you resume food preparation.
- Dispose of gloves immediately upon removal.
- Single-use gloves should not be used around heat or hot fats.
- Gloves are susceptible to contamination, so discard when soiled or damaged.
- Fabric or reusable gloves may not be used with ready-to-eat food.
- Avoid single-use gloves made of natural rubber latex.



A Ready-To-Eat (RTE) Food is any Food that can be Consumed without Further Preparation

# CROSS-CONTAMINATION Avoid the Risk

- 1. Minimize bare hand contact with ready-to-eat food or ice.
- 2. Wash hands before any contact with foods.
- 3. Use proper utensils or single-use gloves.
- 4. Practice good handwashing and hygienic habits.
- 5. Store raw meat, raw poultry, and raw shell eggs below cooked or ready-to-eat foods in the coolers.
- 6. Clean and sanitize all utensils and surfaces that touch food:
  - After each use.
  - •When changing product.
  - Between meat species.
  - •Frequently, when preparing large amounts.
  - •Between raw meats and cooked or ready-to-eat foods.

### Incorrect

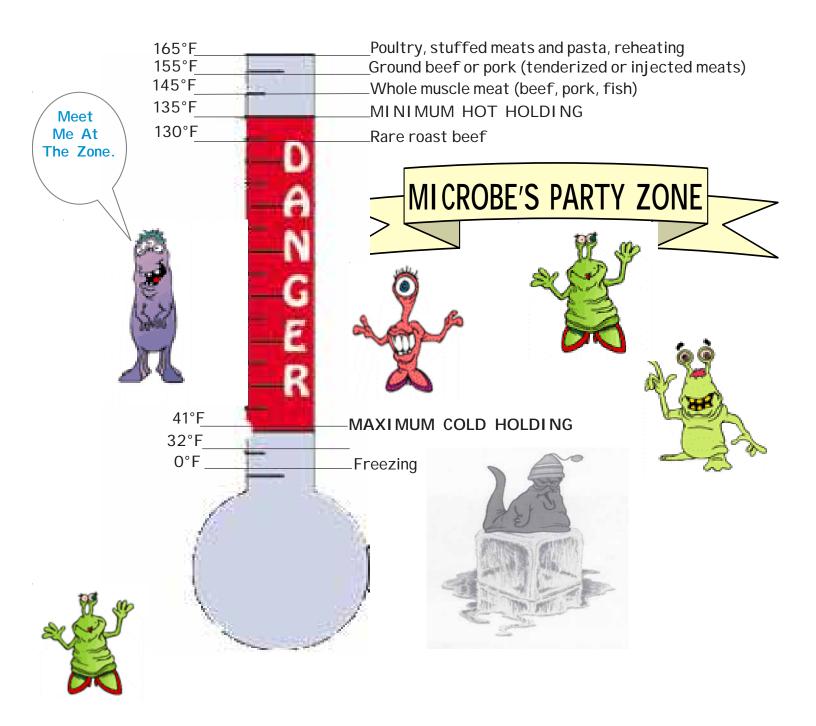
### Correct





Use Separate cutting Boards for Raw Meats and Cooked or Ready-to-Eat Foods

# FOOD PREPARATION CRITICAL TEMPERATURE



Minimum Hot Holding temperature is 135°F • Maximum Cold Holding Temperature is 41°F

### 4 WAYS TO THAW FOOD SAFELY



In a Cooler or Refrigerator at 41°F or Less



In Cold (70°F)
Running Water for
Two Hours
or Less



During the Cooking Process, Continuous Cooking with No Interruption

By Microwaving, as the First Step in a Continuous Cooking Process





### MAINTAIN A SAFE FOOD BAR

# Hold all PHF at proper temperatures Hot foods 135°F or above Cold foods 41°F or below

- Take food temperatures every 2-3 hours.
   If food is in the temperature danger zone, take corrective actions (REHEAT, QUICK CHILL, OR DISCARD)
  - Stir foods frequently to distribute temperature. Do not add fresh food to old. "First In, First Out"
- Trained food employees must monitor self-service food bars
  - Require customers to use clean plates and bowls for return trips to the food bar
  - Post signs
- Protect food from contamination
  - Provide proper serving utensils and sneeze guards



Hot Holding



Cold Holding

### SAFELY HOLD HOT AND COLD FOODS

# Cold foods must be maintained at an internal temperature of 41°F or below

- Date mark foods appropriately.
- Cover foods after completely cooled.
- Cover foods to maintain cold holding temperature.





# Hot foods must be maintained at an internal temperature of 135°F or higher

- Use proper equipment for hot holding.
- Stir frequently to distribute the temperature.
- Covered foods maintain temperature longer.

Proper Holding Temperatures Must be Maintained During Transportation

### DATE MARKING

### Food must be Date Marked If It Is:

- Prepared on-site and refrigerated, or commercially processed after the original container is opened
- Potentially hazardous
- Ready-to-eat
- Held for more than 24 hours

# Mark With the Date to be Consumed By or Discarded:



- Allow seven (7) days if held at 41°F or less
- Allow four (4) days if held between 41°F and 45°F

### If Potentially Hazardous, Ready-To-Eat Food is Frozen:

• Mark that it is to be consumed within 24 hours of removal from freezer

### or

 Mark length of time refrigerated before frozen when food is placed in the freezer. When food is removed from the freezer, mark with a "consume by" date that is seven (or four, if held at 45°F) days minus the length of time food was refrigerated before being frozen.

When in Doubt, Throw it Out!

### COOL FOODS QUICKLY AND SAFELY

### 2-Stage Cooling is Required

Cooked potentially hazardous foods need to move quickly through the temperature danger zone to limit microbial growth:

- Stage 1: 135°F 70°F in 2 hours •Stage 2: 135°F 41°F or less within 6 hours.
- Or within 4 hours if food is prepared using ingredients normally stored at room temperature.

### **Cooling Methods**

### Shallow metal pans - 2" - 4" deep

- Leave pan partially uncovered
- Refrigerate immediately
- DO NOT stack hot pans allow for air flow

### Ice Bath - must use ice and water

- Fill a clean sink or large pan with ice and fill spaces with cold water.
- Divide product into one-gallon containers.



- Immerse product pan to depth of product in sink or larger pan until it is level with ice.
- Agitate/stir every 10 minutes using an ice paddle or other equipment.
- Drain water and replenish ice as it melts.
- Use a clean thermometer to monitor the temperature of the food.
- After the food has cooled to 41°F, refrigerate immediately.

### Small Portions - reduce the mass/volume

- Divide food into smaller portions.
- Separate food into small or thinner portions (2" depth for thick foods/4" for thick liquids).
- Cut or slice portions of meat no larger than 4 inches or 4 pounds.
  - Add ice directly to the product as an ingredient.

### Hints:

- Use rapid chill refrigeration equipment that encourages quick cooling.
- Never try to cool foods in plastic containers.
- Never allow foods to cool at room temperature.



### REHEAT FOODS QUICKLY AND SAFELY

### **Key Elements:**

- Reheat previously cooled foods to an internal temperature of 165°F.
- Rapid reheating is required (two hours or less).
- Stir foods frequently to distribute the heat.
- Measure the internal temperature with a thermometer.
- After reaching 165°F, the hot food must be held at 135°F or above.





### Reheating Methods:

- Direct heat (stove top) is best . . . may also use steam cookers, ovens, and microwave if reheating achieves 165°F within two hours.
- Reheating in steam tables and crock pots is unsafe and discouraged.



Do Not Mix New/Fresh Food with Leftover I tems

### CLEANING AND SANITIZING

### Manual Warewashing Steps:

#### 1. Wash:

- Clean and sanitize sinks and drain boards.
- Presoak/pre-rinse all eating utensils and equipment.
- Use hot soapy water.

#### 2. Rinse:

Use clean hot water.

### 3. Sanitize:

- Use 50-200 ppm chlorine; mix with cool water or
- 200 ppm quaternary ammonia; mix with 75°F or higher water
- Immersion time is 60 seconds
- Air dry utensils and equipment
- Use apprpriate test strips to check concentration

### 4. Air Dry:



### Mechanical Dish Machines (Pre-rinse before loading any machine)

### **HIGH TEMPERATURE:**

### 1. Wash Temperature:

- Single tank, stationary rack, dual temperature machine . . . 150°F.
- Single tank, conveyor machine . . . 160°F.

### 2. Hot Water Sanitization:

· Use clean hot water.

### 3. Sanitization:

- 180°F at manifold.
- 160°F at plate level.

### LOW TEMPERATURE:

- 1. Chemical sanitization required.
- 2. Water temperatures according to manufacturer.
- 3. Chemicals must be auto dispensed into final rinse water check daily.
- Must Have a Visual or Audible Low Sanitizer Indicator.



Making 100 ppm Chlorine Solution is as Easy as 1-2-3 (1 ounce bleach to three gallons water)

### A SAFE AND CLEAN FACILITY

### Insect and Rodent Control (cockroaches, flies, mice, rats, etc.)

Insects and rodents carry diseases and can contaminate food and food contact surfaces. Utilize measures to minimize their presence.



- Protect outer openings by keeping outer doors closed, repair screens, maintain tight fitting doors and openings, use air curtains.
- Eliminate harborage conditions.
- Exterminate regularly.

### **Toxic Materials**

These items can be poisonous or toxic if ingested.

- Detergents.
- Sanitizers.
- Polishes and cleaners.
- Insecticides.
- Rodenticides.
- First aid supplies and personal medication.

### Storage, labeling, and use

- Store separately from foods and food-contact surfaces.
- Never store above foods or food surfaces.
- Label all toxins.
- · Use only approved chemicals in food areas.



Correct

### CORRECTIVE ACTIONS

Risk Factor	Corrective Action
<ul> <li>Approved Source/Sound Condition</li> <li>Food from unapproved source/unsound condition.</li> </ul>	Discard/reject/return.
<ul> <li>Hand Washing</li> <li>Food employee observed not washing hands at appropriate time.</li> </ul>	Employee should be instructed when and where to wash hands.
<ul> <li>Cold Holding</li> <li>Potentially hazardous food held above 45°F MORE than four hours.</li> <li>Potentially hazardous food held above 41°F MORE than four hours.</li> </ul>	<ul> <li>Discard.</li> <li>Use immediately or cool rapidly.</li> </ul>
Cooking  • Potentially hazardous food is undercooked.	Continue cooking to proper temperature.
- Totermany nazardous rood is undercooked.	Continue cooking to proper temperature.
<ul> <li>Potentially hazardous food held below 135°F MORE than four hours.</li> <li>Potentially hazardous food held below 135°F LESS than four hours.</li> </ul>	<ul> <li>Discard.</li> <li>Rapidly reheat 165°F in LESS than two hours or discard.</li> </ul>
<ul> <li>2-Stage Cooling Process</li> <li>Potentially hazardous food cooled from 135°F to 41°F in MORE than six hours.</li> <li>Potentially hazardous food cooled from 70°F to 41°F in MORE than four hours.</li> </ul>	<ul> <li>Use alternative cooling method.</li> <li>Use alternative cooling method or discard.         Discard if total cooling time is more than six hours.     </li> </ul>
Reheating  • Potentially hazardous food is improperly reheated.	Use direct reheating method to achieve 165°F; immediately discard.

### WHEN TO CALL, WHO TO CALL, AND HELPFUL WEB SITES

### **Call the Nebraska Department of Agriculture's Food Division:**

- Prior to opening a food establishment.
- Plan review prior to construction or remodeling.
- Change of ownership.
- Licensing or inspection inquiry.
- Natural disasters involving food.
- Power outages of two hours or more.



NEBRASKA DEPARTMENT OF AGRICULTURE BUREAU OF DAIRIES AND FOODS 301 Centennial Mall South • Lincoln, NE 68509 Telephone: (402) 471-2536 • Fax: (402) 471-2759



### You may also call these local health departments:

DOUGLAS COUNTY HEALTH DEPARTMENT 1819 Farnam, Room 401 Omaha, NE 68183 (402) 444-7480



CENTRAL DISTRICT HEALTH DEPARTMENT 105 E. 1st St. Grand Island, NE 68801 (308) 385-5175

LINCOLN/LANCASTER COUNTY HEALTH DEPARTMENT 3140 N St. Lincoln, NE 68510



(402) 441-8000



HASTINGS HEALTH DEPARTMENT 220 N. Hastings Ave. Hastings, NE 68901 (402) 461-2303

### **Helpful Web Sites**

Bureau of Dairies and Foods	www.agr.ne.gov
KDHE "Did you Wash 'Em"	
Food and Drug Administration	www.fda.gov
United States Department of Agriculture	
Center for Disease Control	www.cdc.gov
Nebraska Restaurant Association	www.nebraska-dining.org
National Restaurant Association	www.edfound.org
Foreign Language Signs/Fact Sheets	www.foodsafety.org

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